

The characteristic genus of the Beluchistan fish-fauna would seem to be *Scaphiodon* or *Barbus*; but, if I may judge from the number of examples sent of each, the former is the most common. The genus *Barbus* is found generally distributed throughout Europe, Asia, and Africa; consequently the existence of some forms in Beluchistan was to be anticipated; but out of the three obtained, two seem to be common to India. *Scaphiodon* extends from the rivers of Syria and Western Asia, along Beluchistan, to the summit of the range of hills; then passing over into Sind, one form is found to be present even in the Salt range of the Punjab. Then we find they are absent until we reach the Western Ghauts, where they are present as far south as the Neilgherry hills and rivers along their bases. This genus is entirely absent from the Himalayas and the plains of India. The fishes of the fresh waters of the Meckran coast appear to be similar to those of the higher regions of Kelat and Quetta, and would seem to be distinct from those of the deltas of the Helmund and the Cabul river. What exists along the Suliemans is as yet an unsolved problem.

2. On *Ziphius novæ-zealandiæ*. By Prof. JULIUS VON HAAST, Ph.D., F.R.S., C.M.Z.S., Director of the Canterbury Museum, Christchurch, New Zealand.

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(Plate XXIII.)

In the 'Proceedings' of this Society for 1876, p. 466, I gave a description of the skeleton of this interesting southern Ziphioid Whale. I there gave, on the authority of the late Mr. F. Fuller, Taxidermist of the Canterbury Museum (who went to secure the skeleton of that specimen, stranded in Lyttelton Harbour), some details about the characteristic form and colour of the skin of the animal in question. When my informant arrived where the fishermen were at work, he found that the blubber had nearly all been taken off; so that he could only partially obtain the required measurements. From the observations I am about to offer to the Society, on two more specimens stranded since then on our sea-beach, it will be seen that some of the statements were far from being correct; in fact, the animal was so much cut about that its lower part was taken for the upper, and *vice versâ*; and consequently no dorsal fin could be found where it was looked for.

The first of the specimens now under review was stranded on Sunday, November 17, 1878, near New Brighton. There were numerous visitors at the time, who observed another whale (according to other lookers-on two whales) in the offing, by which the animal was driven into the surf, where soon it became helpless. Gradually it was drifted upon the low sandy beach, where it died only after a long struggle.

Having received prompt information, I arrived early next morning on the scene, and found the animal quite intact ; so that I was able not only to take the necessary measurements, but also to have a careful sketch prepared (Plate XXIII.). This, as the sequel will show, is of importance, in offering us some curious information as to the habits of this species of Ziphioids.

*Colour.* Head, neck, and anterior portion of the back, as far as the dorsal fin, white ; the rest of the body black, a white narrow line running along the edge of the dorsal fin, which is otherwise black. The line of division between the two colours is everywhere well marked except upon the cheeks, where blackish blotches advance some distance towards the nose. The form of the animal is rather slender for its length, its height at the occiput being only 2 feet 3 inches, and about 9 feet from the tip of the lower jaw 3 feet 3 inches, after which it tapers gradually to the tail. The animal proved to be a young female.

The two teeth at the termination of the lower jaw stood half an inch above the gums, having a diameter of one inch where they rose above the latter. They are conical, and have a sharp apex, and are not covered anywhere with enamel, not even on the tip. The dentine shows a number of horizontal lines one above the other, running round the tooth. They are therefore quite different from the teeth of the two specimens described in vol. ix. of the Transactions of the New-Zealand Institute, which were found to be covered with a rough cement. They are also different from those of another specimen, of which I shall give some details further on.

A single fold begins below the throat, 1 foot 1 inch from the tip of the lower jaw. After rising rapidly for 4 inches, it continues for 7 inches more at a smaller angle, ceasing where the black colour of the throat begins ; this fold is separated into two portions by a ridge of the breadth of half an inch below the centre of the throat. Lips flesh-coloured ; roof of mouth slaty black ; no signs of teeth along the jaws ; there is, however, a hardened ridge along each side of the palate. The extremity of the lower jaw projects about 2 inches beyond the upper. The head rises steeply above the upper lip to the forehead. The blowhole is situated on the vertex of the head, just above the eye. Both the form and the size of the dorsal fin, and of the tail-lobes, show that this species must be a remarkably swift swimmer.

<i>Measurements.</i>		ft.	in.
Total length . . . . .		19	6
Greatest circumference . . . . .		9	9
From point of lower jaw to the beginning of the pectoral fin . . . . .		4	9
From fork of tail to termination of falcate dorsal fin . . . . .		6	5
Length of the opening of the mouth . . . . .		1	3
From point of lower jaw to eye . . . . .		2	6
From point of lower jaw to beginning of fold below throat . . . . .		1	1
Diameter of blowhole, concave towards head . . . . .			6

<i>Measurements (continued).</i>		ft.	in.
From fork of tail to vent . . . . .		5	4
From fork of tail to pudendum . . . . .		6	6
Breadth of caudal fin . . . . .		6	1
Base of dorsal fin . . . . .		1	1
Height of dorsal fin . . . . .			8
Breadth of pectoral fin . . . . .			7
Length of pectoral fin . . . . .		2	6
Eye, horizontal diameter . . . . .			1½
Eye, vertical diameter . . . . .			1

Before giving a description of the external appearance of the specimen under review, I wish to allude to another female, 21 feet 6 inches long, of the same species, stranded on May 15, 1879, on the sea-beach near Kaiapoi, and of which the skeleton was also secured. This was doubtless a full-grown, aged animal, the terminal epiphyses being so well ankylosed to the body of the vertebræ that even the line of junction could be scarcely distinguished, while in the New-Brighton specimen these disks were still unankylosed and detached themselves readily during maceration.

In form of the body and coloration this animal resembled in every respect the New-Brighton specimen.

However, the two teeth existing at the tip of the lower jaw could not be felt when passing the fingers over the gums, and were only disclosed when making incisions. The teeth are the smallest of all those known to me, being 1·98 and 2 inches long, and only ·46 of an inch broad. The left tooth weighs 66, and the right 62 grains. The flattened root is square, and somewhat constricted a quarter of an inch above the base, after which the tooth expands, being broadest about the middle. It then contracts rapidly, running out to a sharp point. There is thus confirmatory evidence that the teeth with age are absorbed and disappear gradually below the gums, although it is possible that even below the gums they may still be of some use to the animal. It is a peculiar character of the small teeth of the Kaiapoi specimen that they should be so very thin and terminate in a sharp point, and that the latter should be covered with real enamel, different from any observed upon the dentine in any other teeth of the same species.

Returning to the first-mentioned specimen from the New-Brighton beach, and of which the annexed sketch (Plate XXIII.) gives a faithful representation, it must strike us with astonishment to see the skin of this animal (a female) so fearfully lacerated. The late taxidermist of the Museum, when giving me some notes of the external appearance of what remained of the specimen stranded in Lyttelton Harbour in July 1872, informed me that the upper portion was marked by numerous oval spots, two to three inches across, like the skin of the Leopard; this, as I have observed already, was the lower portion. Moreover he thought that the animal must have had fearful struggles amongst the rocks, the skin appearing torn in all directions. These peculiar oval spots were visible at the first glance on the skin of the

New-Brighton specimen; but on examining them more closely, it at once became clear that they were not natural, but were the scars of injuries the animal had received during lifetime at various periods. At the same time the animal was also covered with a number of seamed scars running in all directions, of which the form and regularity proved also that they could not have been caused by the animal being thrown amongst the rocks, but must have been inflicted by some other animal. Examining the oval spots, I found that although they varied from a length of 2 inches to that of 3 inches, and from a breadth of 1 inch to that of 2 inches, they had invariably the same character, viz. that of an oval scar of a dirty whitish colour, both in the white and the black coloration of the skin, with two well-marked points in the centre, always about one and a quarter to one and a half inch apart. These two dots had evidently been the wounds inflicted, round which the scar had been formed. In some instances these points were quite healed over, so as to show that the injury had been done long ago; in others there were two fresh sores, as if the animal had been struck only a few hours before its death.

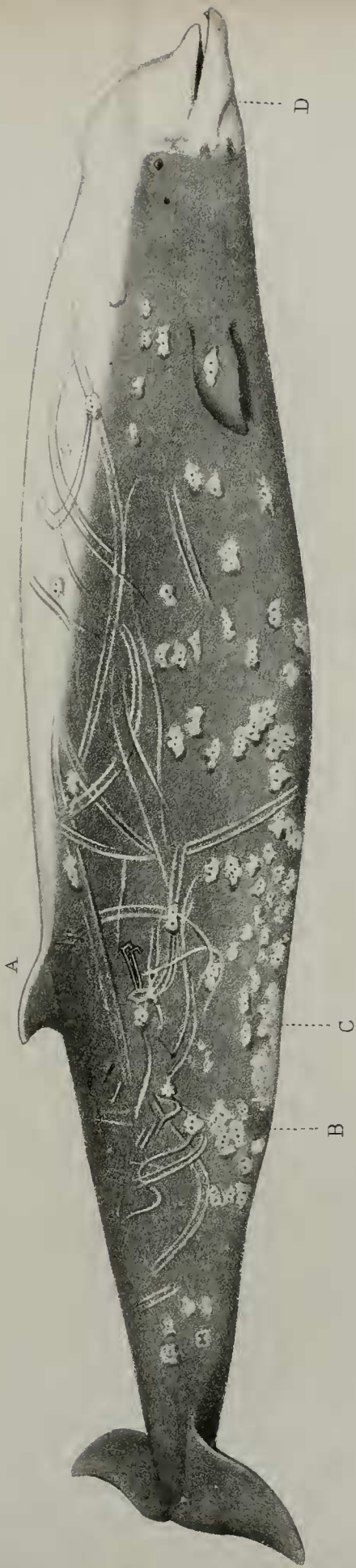
Although occurring all over the body, with the exception of the back, these oval scars were most frequent below the belly, and principally round the pudendum, where they were often so close together that the scars not only ran into each other, but evidently covered each other, so as to show that the same spot had been struck repeatedly. The seamed scars, on the other hand, occurred more numerous on both sides of the animal; only a few crossed the back or reached to the belly. With a few exceptions these seamed scars were always in pairs  $1\frac{1}{4}$  to  $1\frac{1}{2}$  inch apart, and each about  $\frac{1}{4}$  inch broad. Some of them ran for a considerable distance, seven to eight feet, others only for the space of a few inches. That there had been a considerable struggle became evident from the direction these seamed scars had taken, some forming regular hooks; some of these wounds were evidently of long standing, being well healed; others had been inflicted a very short time before the stranding of the animal, as they were quite fresh and deep, and sometimes had a breadth of  $\frac{3}{4}$  of an inch. From the character of these wounds, it appears certain that they could have only been made by an animal or animals of the same species with the two teeth of the lower jaw, the distance of their apices being one and a quarter to one and a half inch from each other, and thus corresponding with both the oval and seamed scars. The aged female from the Kaiapoi beach, of which I gave some particulars on the preceding pages, was scarred and seamed in exactly the same manner.

It is thus evident that the females are subject to attacks either from the males during rutting-time, or that they fight amongst themselves. In the latter case (which, however, appears to me to be rather improbable) the teeth of the specimen figured must have been of considerable use to the animal; and it is then difficult to understand how the full-grown or aged animals, when their teeth disappear below the gums, can successfully resist the attacks of the younger members

of the same species, unless their greater bulk, or probably greater speed, make up for this disadvantage. Of the males of *Ziphius novæ-zealandiæ* we know nothing at present; but there is no doubt in my mind that with them the teeth in front of the lower jaw are both permanent and of larger size than those of the females, just in the same manner as in other Ziphioid genera. Fortunately, however, there is some evidence at hand, strengthening such a hypothesis. Dr. Hector, in his account in the Transactions of the New-Zealand Institute (on p. 164, vol. v.) of the skull of *Epiodon chathamensis*, obtained in the Chatham Islands, describes the teeth of this species as follows:—"The lower jaw . . . terminates in two short, stout, slightly compressed teeth, 2 inches long and 4 in circumference, implanted in shallow sockets. The teeth have slight irregular striæ, and are worn down into two lateral facets divided by an acute ridge. The position of the teeth when the jaws are closed is two inches beyond the upper mandible; and, unless they are applied against callosities on the upper lip, it is difficult to conceive how they are worn down to this acute form. Weight of teeth 817 and 836 grains." "Two teeth of similar form, taken from the jaw of a whale cast up on the Manawatu beach, have their facets forming an obtuse pyramidal tip." Of this last pair of teeth no weight is given; but it is evident from the drawing that they must be as heavy as the former. The teeth of the females examined by me range from 62 to 200 grains. There is no doubt that the form and chief characteristic features of the skull from the Chatham Islands described as *Epiodon chathamensis* and those of the two female whales secured by me are almost identical, if we except the teeth, which in the former are at least four times as heavy as in the latter. In my paper published in the 'Proceedings' of this Society for 1876, p. 468, I pointed out already that the skull of this Chatham-Island whale might have belonged to the male of *Epiodon novæ-zealandiæ*, thus accounting for the difference.

After having seen the two female animals stranded on our beach scarred in such a remarkable manner, I am more than ever inclined to this opinion. If the three specimens alluded to had been males, it would be easy enough to understand that the wounds had been inflicted during their fights in rutting-time, or for supremacy, as this is the case with most terrestrial animals. However, the fact that the wounds by which the oval scars were produced are mostly in close proximity to the pudendum, suggest forcibly that they have been inflicted by male animals.

With respect to the external appearance of the different species of other Ziphioid genera, such as *Mesoplodon*, *Berardius*, and *Oulodon*, of which several specimens, both male and female, have been examined by me, I may state that none of them had the least scar or wound upon them. Of course this may be accounted for by the fact that the teeth of most of these genera are situated so far backwards that they could scarcely be used for the same mode of attack. Dr. Hector, in the 'Transactions of the New-Zealand Institute' (p. 338, vol. x.), gives an account of the capture of an adult male of *Berar-*



T. S. Consans del. J. Smit lith.

Hanhart imp

ZIPHIUS NOVÆ-ZEALANDIÆ.